



July 25, 2017

Mr. James Markow  
Information Systems Manager  
Town of Smyrna  
27 South Market Street Plaza  
P.O. Box 307  
Smyrna, DE 19977

Dear Mr. Markow:

Subject: Generator Interconnection Application – 900 W South Street (Blair) - Purchase

Following is a technical review of the Town of Smyrna Generator Interconnection Application - Short Form for a 13.16 (DC) photovoltaic facility at 900 W South Street in Smyrna, Delaware (Blair).

#### Review

This review reflects the customer's (Blair) agreement with GoLiberty for a purchase and installation of solar equipment. Originally, an agreement was made with SolarCity, the application from that agreement was signed on November 11, 2016. However, new information was received on June 6, 2017 to indicate the switch from SolarCity. The customer-vendor contract was signed on April 11, 2017. The application was dated March 1, 2017, and received on March 8, 2017. Site data was based on the previous reviews of the SolarCity system assuming that the location of the site remains the same. This site data was requested on February 20, 2017 and received on February 22, 2017. Additionally, the load data information was taken from previous reviews and was received on February 13, 2017. Further information was requested on June 30, 2017 and was received on July 14, 2017. PV watt analysis remained outstanding and was requested again on July 19. Technical data supplied with the application was reviewed on July 25, 2017, and determined to be sufficient for the electrical technical review.

Customer (Blair) used 20,840 KWh during the preceding 12-month period. Title 26, Sec.1014(d)(5) requires size compliance as "... design to produce not more than 110% of (historic) consumption ...". Applicant provided solar production analysis projects 16,531 KWh production output for this solar facility installation. This output level is in current compliance with DE legislation.

Following is the further review of this Interconnection Application.

Applicant Proposes:

- To utilize forty-seven (47) photovoltaic modules (SolarWorld 280 Mono) each with a nominal rating of 280 watts (DC).
- An interconnection for 13.16 KW (DC) solar capacity.
- To utilize two inverters, an inverter (Fronius Primo 10.0) rated at 10,000 watts (10.0 KW) (AC) and an inverter (Fronius Primo 3.8) rated at 3,800 watts (3.00 KW) (AC).
- Roof mounted installation of photovoltaic modules.
- To utilize two AC Safety Disconnect Switches (HU361RB, 30 amp, non-fusible and 60 amp, non-fusible).
- Requests "Net Meter" interconnection for the solar facility.
- Include a "web-enabled" meter to measure the power the solar facility delivers to the customer.
- No charges to the customer on per KWh basis for electricity produced by the solar facility.
- The Applicant is purchasing the solar facility and will directly utilize the output from the solar facility. GoLiberty will utilize internal supplied metering for purposes of satisfying a performance guarantee that would refund on a per KWh basis if solar electricity production falls below guaranteed levels. No KWh will be "sold" to the Applicant by GoLiberty.
- This review is based upon and predicated on the consideration that this is a sale agreement and that there are no purchases of KWh by the customer (Blair) from Applicant/Developer (GoLiberty), and that the "web-enabled meter" is utilized only for the purpose of assessing the performance guarantee agreement between the parties (and perhaps for solar REC accretion). Therefore, the KWh values recorded by this GoLiberty provided meter would be utilized only for refunding performance guarantee deficiencies to customer (Blair), and customer is in no regard purchasing electricity (KWh) from GoLiberty, but is contracting solar equipment with a performance guarantee and therefore this Net Metering installation request is viewed as a lease of equipment agreement.
- Further, the Applicant proposed inverter is a "transformerless" inverter. Areas of particular concern to the utility regarding the newer transformerless type inverter is provision of IEEE 1547 certification to include issues of both non-islanding of the solar facility and power quality performance. The non-islanding feature is of particular importance for personnel safety of both utility and emergency service persons. The power quality requirements are also of particular importance for the benefit of neighboring utility customers, as well as for the customer (Blair). The following approval of this application is predicated on the understanding that the Applicant's solar facility does and will continue to meet the performance requirements of IEEE 1547.
- Customer (Blair) is jointly served by a single phase utility transformer shared with two (2) other neighbor residential customers. Applicant should be aware that any power quality issues related to this solar installation will require immediate correction, or may result in disconnection of the solar facility, or customer's service.
- Applicant is requested to provide the license of the electrical contract providing installation services (*can be provided with Electrical Inspection Certification*).

The Interconnection Application location is in a residential area. There are responsibilities that the Applicant assumes when interconnecting with the utility electric distribution system. The Applicant and the Applicant's provider of solar equipment are to be informed that the following conditions exist at this location.

- Residential neighborhoods contain consumers with certain sophisticated and sensitive electronic equipment. In the event of power quality issues that result from the interconnection of the Applicant's solar facility, the Applicant will be responsible to cure these power quality problems. The existing utility transformer that Applicant proposes to interconnect with (through Net Metering) is shared with electric service to other residential electricity users, and the power quality of these neighboring electric customers is to be protected.
- The electrical location of this solar installation may be near the beginning or the end of the utility distribution circuit. This distribution circuit also has automatic reclosing to facilitate timely restoration of power following short duration power outages and electrical events. The Applicant's solar equipment must be able to automatically separate from the utility distribution system and provide sufficient protection for the Applicant's electronic systems during times when automatic reclosing occurs. Further, due to the location near the end of the distribution circuit, there may be increased susceptibility to introduced harmonics, DC injection, and/or voltage flicker from the Applicant's interconnection. The Applicant will be responsible to cure any power quality problems that may result from the interconnection of the Applicant's solar facility.

#### Applicant's Responsibilities

The Applicant's Interconnection Application can be "Conditionally Approved" with the following provisions:

- Applicant is to provide the proposed AC Safety Disconnect Switch for the solar facility with installation at a location within line-of-sight proximity to the utility meter. If the AC Safety Disconnect Switch cannot be installed in line-of-sight proximity to the utility meter, then the Applicant should advise the utility so that alternate arrangements for the location of this AC Safety Disconnect Switch can be discussed and coordinated.
- The above AC Safety Disconnect Switch is to be a "... readily accessible, lockable, visible-break, isolation device" as per IEEE 1547 at 4.1.7. The utility and emergency service personnel must be able to apply "lock-out" & "tag-out" protocol to this safety disconnect switch during maintenance and utility emergency activities.
- The Applicant will attach notification warning signage to the AC Safety Disconnect Switch. The Applicant is to provide this signage.
- The Applicant will provide for anti-islanding operation of the solar facility interconnection both initially and during the term of the operation of the solar facility. The Applicant will provide a test of the anti-islanding of the solar facility when required by the utility, and the utility will have the option of witnessing this anti-islanding test. The utility will require an initial "Witness Test" prior to interconnection. Applicant is to contact utility when the interconnection electrical inspection certificate is received to schedule this test.

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- The Applicant is to provide notification to the utility prior to initial operation of the solar facility, and the utility is to provide final written approval prior to this in-service interconnection by the Applicant.
- The Applicant is to provide the utility with a final electrical inspection certification prior to in-service and interconnection in-service operation of the solar facility.

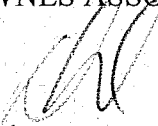
#### Utility's Responsibilities

- The utility will confirm that signage (Warning Label) is affixed at three locations: transformer, utility meter, and Applicant's AC Safety Disconnect Switch. This signage is to provide notification to utility personnel and emergency service personnel that there is customer-owned generation at this site and that for maintenance and emergency services, the customer-owned generation must be disconnected to provide safe access for personnel.
- The utility is to install the above signage at the utility transformer and at the utility meter. The Applicant is to install the above signage at the Applicant's AC Safety Disconnect Switch.
- The utility reserves the right to witness the Applicant's initial and/or periodic test of the solar facility to ensure anti-islanding operation.
- The utility will provide final approval to the Applicant prior to interconnection, and the utility will have the opportunity to "Witness Test" the anti-islanding operation of the solar facility prior to this final approval.
- The utility will remove the existing single phase meter from the Applicant's facility and replace it with a bidirectional meter to provide for Net Meter registration upon final approval.
- The utility is to receive final electrical inspection certification from Applicant prior to in-service of the Applicant's interconnection and utility's final approval.

With the above conditions, the Applicant's Generator Interconnection Application is "Conditionally Approved" subject to completion of the above requirements. Please contact me if there are any questions on the above.

Sincerely,

DOWNES ASSOCIATES, INC.



David V. Downes, P.E.

DVD/slh

cc Bill Evans, Town of Smyrna  
Gary Stulir, Town of Smyrna  
Mike Osowski, GoLiberty  
Mark Blair, 900 W South Street, Smyrna, DE 19977  
Timothy B. Shaver, Downes Associates, Inc.  
Mark W. McAllister, Downes Associates, Inc.

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